

REMARKS

Claims 1, 3-11 and 13-21 are pending in this application, of which claims 13, 20 and 21 have been withdrawn from consideration. Claims 1, 11 and 15 have been amended. No new claims have been added.

In the Office Action dated March 9, 2010, the Examiner rejected the claims as follows:

1. The 35 USC §103(a) rejection of claims 1, 3-11, 14 and 16-18 as unpatentable over Ito in view of Hatai et al. (both previously applied); and
2. The 35 USC §103(a) rejection of claims 1, 3-11, 14 and 16-18 as unpatentable over Tomoaki in view of Hatai et al.

As Applicants argued in their previous response, Ito discloses a micro vacuum pump capable of enhancing the performance of exhausting rare gases as well as active gases thereby to ensure quality, good repeatability and stable getter action of the micro vacuum pump over a long time. The micro vacuum pump capable of maintaining a high degree of vacuum includes a first conductive substrate having many protrusions and mounting a second conductive substrate disposed with a predetermined interval provided with respect to the first conductive substrate so that it faces the protrusions. A gate electrode is disposed in the vicinity of the apexes of the protrusions on the first conductive substrate via an insulator layer, and is positioned to face the second conductive substrate. Relative to the first conductive substrate, a negative potential is supplied to the second conductive substrate, and, a same negative potential difference is also applied to the gate electrode relative to the cones.

Hatai et al. discloses a field-emission type electron source and a method of fabricating the same. As best understood from the disclosure, such electron source is used in a planar illumination source, a flat-display element, or solid-vacuum device. Applicants respectfully submit that Hatai et al. belongs to a non-analogous technical field separate and apart from the present invention, and does not teach, mention or suggest using such electron source for modifying an object, which is the subject matter of the present invention.

Thus, the teachings of Ito, directed to a micro vacuum pump, may not be combined with the teachings of Hatai et al., which is directed to the non-analogous art field of field-emissive type electron source and a method of fabricating the same, to teach the present invention in which the claims are directed to a method of modifying an object with electrons.

Furthermore, none of the cited references teaches or suggests the structural features of the present invention, namely, that the strong field includes columnar polycrystalline silicon grains extending toward the first electrode, first silicon oxide thin films formed in surfaces of the silicon grains, fine grains of nanocrystalline silicon formed between the adjacent silicon grains, and second silicon oxide thin films formed in surfaces of the fine grains. Therefore, the electron source of the invention has a strong energy, compared with other electronic sources.

Accordingly, claims 1, 11 and 15 have been amended to recite this feature, which is supported on page 7, lines 13-18 of the specification of the instant application.

Thus, the 35 U.S.C. § 103(a) rejections should be withdrawn, and the instant application is now in condition for further examination.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1105.

Dated: August 9, 2010

Respectfully submitted,

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